

WHAT IS CLAIMED IS:

1. An exhaust system (1;41) comprising:  
an exhaust passage (6) that allows exhaust gas discharged from an internal  
5 combustion engine to pass therethrough;  
a primary exhaust emission control unit (2) including a catalyst (27) to purify  
the exhaust gas; and  
a first exhaust heat collecting unit (28) including a thermoelectric element  
(30) that converts thermal energy of the exhaust gas into electric energy,  
10 characterized in that  
the exhaust passage is divided into a first passage (25) provided with the  
primary exhaust emission control unit (2) and a second passage (26) provided with  
the first exhaust heat collecting device (28) including the thermoelectric element  
(30); wherein  
15 the exhaust system further comprising a control member (22j,22k,22m,22n)  
that is operated to change a flow of the exhaust gas between the first passage (25) and  
the second passage (26);  
an operation of the control member (22j,22k,22m,22n) is controlled based on  
a temperature in the primary exhaust emission control unit (2);  
20 the control member (22j,22k,22m,22n) is operated such that the exhaust gas  
flows through the second passage (26) when the temperature in the primary exhaust  
emission control unit (2) exceeds a predetermined temperature; and  
the predetermined temperature is determined based on an activation  
temperature range of the catalyst (27) in the primary exhaust emission control unit  
25 (2).
2. The exhaust system according to claim 1, further comprising a secondary  
exhaust emission control unit (3) provided on the exhaust passage (6) where the first  
passage and the second passage are joined.  
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3. The exhaust system according to claim 2, wherein an operation of the control  
member (22j, 22k, 22m, 22n) is controlled based on a temperature in the secondary  
exhaust emission control unit (3).
- 35 4. The exhaust system according to claim 3, wherein the control member (22j,  
22k, 22m, 22n) is operated such that the exhaust gas flows through the second  
passage (26) the temperature in the secondary exhaust emission control unit (3)  
exceeds a predetermined temperature.

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5. The exhaust system according to claim 4, wherein the predetermined temperature is determined based on an activation temperature range of the catalyst in the secondary exhaust emission control unit.
- 5 6. The exhaust system according to claim 2, further comprising a second exhaust heat collecting unit (42) including a thermoelectric element downstream of the secondary exhaust emission control unit (3).
7. The exhaust system according to claim 1 or 2, wherein:  
10 the first passage (25) and the second passage (26) are combined into a single structure;  
the first passage (25) is provided in a center of the structure; and  
the second passage (26) is provided on an outer periphery of the first passage (25).
- 15 8. The exhaust system according to claim 1 or 2, wherein:  
the second passage (26) includes a heat exchange member that transfers heat of the exhaust gas to the exhaust heat collecting device; and  
the exhaust heat collecting device is provided with a catalyst for purifying the  
20 exhaust gas.
9. The exhaust system according to claim 8, wherein the catalyst (27) is carried on the heat exchange member (29).
- 25 10. The exhaust system according to claim 7, wherein the structure in which the first passage (25) and the second passage (26) are combined is placed in the vicinity of an exhaust manifold (EM) in the internal combustion engine.
11. The exhaust system according to any one of claims 1 to 4, wherein the control  
30 member (22j, 22k, 22m, 22n) serves to change each flow rate of the exhaust gas flowing into the first passage (25) and the second passage (26).
12. The exhaust system according to claim 11; wherein the control member comprises (22j, 22k, 22m, 22n) a valve (22m) that is operated to close and open one  
35 of the first passage (25) and the second passage (26) at a predetermined degree.

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